

REMARKS

The Applicants sincerely appreciate the thorough examination of the present application as evidenced by the Office Action of March 28, 2005. In particular, the Applicants appreciate the Examiner's indication that the subject matter of Claims 1-13 and 95-97 is allowable. In response, the Applicants have canceled Claim 14; amended Claim 63 to more clearly define the claimed invention; amended Claim 78 to overcome an informality noted therein; rewritten Claim 102 in independent form (including all recitations of Claim 14 as originally filed); amended Claims 98-101 and 109 to depend from Claim 102; canceled Claim 110; and rewritten Claims 119 and 121 in independent form.

In the following remarks, the Applicants will show that all claims are patentable over the cited art. A Notice of Allowance is thus respectfully requested in due course.

Claims 95-97 Are In Condition For Allowance

The Office Action states that Claims 95-97 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form. The Applicants respectfully submit, however, that Claim 95 (as originally filed) is an independent claim, and that Claims 96 and 97 depend from Claim 95. Accordingly, the Applicants submit that Claims 95-97 are in condition for allowance as originally filed. Indication that Claims 95-97 are allowed is thus requested.

Claims 102-109 Are Allowable

The Applicants respectfully submit that the subject matter of claims 102-109 is patentable because no objections or rejections have been applied to these claims. Accordingly, Claim 102 has been rewritten in independent form (including all recitations of Claim 14). The Applicants thus submit that independent Claim 102 and dependent Claims 98-101 and 103-109 (depending from Claim 102) are in condition for allowance, and an indication of allowance is respectfully requested.

All Rejections Under 35 U.S.C. Sec. 112 Have Been Overcome

With respect to Claim 78, the Office Action states that there is insufficient antecedent basis for the recitation "applying a thermal process to the first and second tantalum titanium oxide films." In response, the Applicants have amended step (d) of Claim 78 to recite "forming a second tantalum titanium oxide film" Accordingly, all rejections under 35 U.S.C. Sec. 112 relating to Claim 78 have been overcome.

With respect to Claims 124 and 125, the Office Action states that there is insufficient antecedent basis for the recitation "of the second tantalum titanium oxide film" in claim 78. All rejections under 35 U.S.C. Sec. 112 relating to Claims 124 and 125 have been overcome by the amendment of Claim 78 discussed above. Accordingly all rejections under 35 U.S.C. Sec. 112 have been overcome.

All Objections Under 37 C.F.R. 1.75(c) Have Been Overcome

The Office Action has objected to Claim 110 as being of improper dependent form for failing to further limit the subject matter of a previous claim. In response, Claim 110 has been canceled. Accordingly, all objections under 37 C.F.R. 1.75(c) have been overcome.

Claims 63, 111-118, 120, And 123 Are Patentable

Claim 63 has been rejected as being anticipated by U.S. Patent No. 6,640,403 to Shih *et al.* ("Shih"). Claim 63, however, is patentable for at least the reasons discussed below.

As amended, Claim 63 recites a method for manufacturing a semiconductor memory device. More particularly, the method includes:

- (a) forming a lower electrode on an upper surface of a semiconductor substrate;
- (b) forming a dielectric layer of a oxide film including titanium and tantalum, on an upper surface of the lower electrode; and
- (c) forming an upper electrode on an upper surface of the dielectric layer, wherein, in step (b), the density of titanium in the dielectric layer varies over the thickness of the dielectric layer;
wherein, in step (b), the density of titanium is adjusted to be 0.1 to 15 percent. (Underline added.)

The Applicants respectfully submit that Shih fails to teach or suggest a dielectric layer of an oxide film including titanium and tantalum wherein the density of titanium in the dielectric layer varies over the thickness of the dielectric layer. As stated in the Office Action:

Neither Shih ... nor Park (US0018307) teach or suggest altering the titanium content (density) within a layer or among consecutive layers.

Office Action, page 12.

For at least these reasons, the Applicants respectfully submit that Shih fails to teach or suggest the recitations of Claim 63, and that Claim 63 is thus patentable. The Applicants further submit that dependent Claims 111-118, 120, and 123 are patentable at least as per the patentability of Claim 63 from which they depend.

Claims 78, 119, 121-122, And 124-136 Are Patentable

Claims 78, 119, 121-122, and 124-136 have been rejected under 35 U.S.C. Sec. 103(a) as being unpatentable over Shih in view of U.S. Patent Pub.No. US2004/0018307 to Park et al. ("Park"). The Applicants respectfully request, however, that the rejections of Claims 78, 119, 121-122, and 124-136 be withdrawn because Park is not prior art with respect to the present application. Park is not prior art with respect to the present application because the U.S. filing date of Park is after the filing date of Korean Application No. 2002-63024 from which the present application claims priority.

In particular, the filing date of Korean Application No. 2002-63024 is October 16, 2002. The U.S. Filing Date of Park is February 21, 2003, which is after the filing date of Korean Application No. 2002-63024. As Park is not prior art with respect to the present invention, the Applicants respectfully submit that all rejections based on the Park have been overcome. Accordingly, Claims 78, 119, 121-122, and 124-136 are patentable.

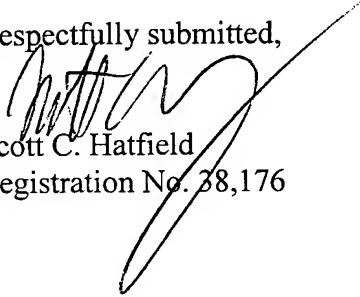
Pursuant to 37 CFR 1.55, a translation of Korean Application No. 2002-63024 is attached along with a Statement of Accuracy of Translation. Please note that this claim of priority has been perfected to advance prosecution of this application to allowance and should not be construed as an admission with respect to any teachings of the Park.

Attorney Docket No. 5649-1073
Application No.: 10/616,056
Filed: July 9, 2003
Page 15 of 15

CONCLUSION

Accordingly, the Applicants submit that all pending claims in the present application are in condition for allowance, and a Notice of Allowance is respectfully requested in due course. The Examiner is encouraged to contact the undersigned attorney by telephone should any additional issues need to be addressed.

Respectfully submitted,


Scott C. Hatfield
Registration No. 38,176

Customer Number 20792
Myers Bigel Sibley & Sajovec, P.A.
P.O. Box 37428
Raleigh, NC 27627
919-854-1400
919-854-1401 (Fax)

CERTIFICATE OF FACSIMILE TRANSMISSION

Date of Deposit: June 27, 2005

I hereby certify that this correspondence is being facsimile transmitted to the United States Patent and Trademark Office to (703) 872-9306 on the date indicated above and is addressed to: MAIL STOP AMENDMENT, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Joyce Paoli

